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AIRTRAQ® IS THE PREFERRED DEVICE FOR DIFFICULT INTUBATION BY RESIDENTS?

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ABSTRACT

Background: The Airtraq® optical laryngoscope is an intubation device designed to provide a view of the glottis without alignment of the oro-pharyngeal and laryngeal axes. Recent literature shows that, given its two significant features: time effectiveness and short learning curve, Airtraq® is the most favorable option when it comes to difficult intubation.

Objectives: The goal was to analyze Airtraq® effectiveness when used by inexperienced physicians in anticipated difficult intubation in adult patients.

Materials and methods: We conducted a prospective evaluation in ten medical residents using the Airtraq® device for the first time. All of them were experienced in using Macintosh. Each resident conducted laryngoscopy and intubation with the Airtraq® device after short didactic guidance. Eighteen patients were included, over a period of seven months. The patients showed four difficult intubation predictors: history of difficult intubation, thyromental distance less than 60 mm, mouth opening less than 35 mm and Mallampati class 3 or 4. All of them were clinically examined for difficult airway by an ENT specialist.

Results: Before induction of anaesthesia all residents received a short demonstration on the use of the Airtraq®. Every participant was supervised by an Airtraq® handling specialist for each intubation maneuver. In sixteen patients, Airtraq® insertion, glottis visualization and subsequent intubation were easy and rapid, without arterial oxygen desaturation. In two patients the trachea was intubated from the second and third attempt. There were two tracheal intubation failures, associated with extended tracheal intubation and an Airtraq® specialist had to continue with intubation. The Airtraq® reduced the duration of intubation attempts in all cases, reduced the number of optimization maneuvers required, and reduced the potential for dental trauma. However, the two intubation failures emphasize the fact that Airtraq® laryngoscopy requires a clinical training process, especially in the event of anticipated difficult airway management situations.

Conclusion: The residents participating the study, found the Airtraq® easier to use in all scenarios compared to the Macintosh laryngoscope. The Airtraq® may be the preferred device, required by inexperienced physicians in cases of difficult airway.

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Introduction

Residents with limited clinical experience are frequently required to perform direct laryngoscopy in the clinical setting. In this context, difficult or failed intubation is an important cause of morbidity and mortality, due to direct airway trauma or systemic hypoxia complications (1). Novel intubation devices can reduce the morbidity and mortality risk in patients, when less experienced physicians are faced with difficult intubation scenario.

The Airtraq® optical laryngoscope is an intubation device designed to provide a view of the glottis without alignment of the oro-pharyngeal and laryngeal axes. Recent literature shows that, given its two significant features: time effectiveness and short learning curve, Airtraq® is the most favorable option when it comes to difficult intubation (2).

The Airtraq blade is anatomically shaped and made of two side-by-side channels. In one of the channels an endotracheal tube (ETT) in all sizes can be positioned and inserted. The other ends in a distal lens allowing visualization of the glottis, the surrounding structures and the tip of the ETT. There is a battery-operated light in the blade's end. A proximal viewfinder uses lens and prism combinations, instead of fiber optics for transmission of the image. After the blade is inserted in the midline of the mouth over the base of the tongue, the viewfinder optimizes the view of the glottis and the tip of the ETT. The ETT does not obstruct the clear view of the vocal cords and in this way the Airtraq requires less manual skills to use (2).

Objectives

The goal was to analyze Airtraq® effectiveness when used by residents with limited difficult tracheal intubation skills in adult patients presenting for elective surgery. We hypothesize that Airtraq would be superior in comparison to Macintosh laryngoscope.

Materials and methods

We conducted a prospective single center evaluation in the University Clinic for Anaesthesia, Reanimation and Intensive Care in Skopje. We performed indirect laryngoscopy and subsequent endotracheal intubation using the Airtraq® in patients presented with difficult intubation predictors for elective urology surgery under general endotracheal anesthesia. The patients were intubated by ten medical residents using the device for the first time. All of them were experienced in using Macintosh laryngoscope. Each resident conducted laryngoscopy and intubation with the Airtraq® device after short didactic and video guidance. As primary goal, we evaluated the time duration of tracheal intubation defined as the time from inserting the Airtraq in the mouth between the teeth to the moment of the visualization of the EET passing the vocal cords. Additionally we evaluated the number of intubation attempts and the rate of successful placement of the ETT in the trachea. All of the residents were closely monitored and guided by a senior anesthesiologist experienced in difficult intubation and Airtraq management. The position of the ETT tip was verified after each intubation attempt. When failed intubation attempt occurred, an Airtraq handling specialist proceeded with intubation.

Results

We includedASA I-III, aged >18 years patients, over a period of seven months. Inclusion criteria were four of the difficult intubation predictors: 1. History of difficult intubation; 2. Thyromental distance less than 60 mm; 3. Mouth opening less than 35 mm; 4. Mallampati class 3 or 4. All of them were clinically examined for difficult airway by an ENT specialist and had anesthetic pre-evaluation by the primary anesthesiologist. All patients received a standardized general anesthesia and monitoring. Induction was without complications. Following 3- minute ventilation, laryngoscopy was performed by a resident under the specialist supervision and guidance. Measuring time was started after Airtraq was placed between teeth and stopped when visualization of EET passing vocal cords was obtained.

Before anesthesia induction all residents received a short presentation and demonstration on the use of theAirtraq®. Every participant was supervised by an Airtraq® handling specialist for each intubation maneuver for the whole duration of the intervention. Eighteen patient was included in the evaluation for the whole study period. In sixteen patients, Airtraq® insertion, glottis visualization and subsequent intubation were easy and rapid, without arterial oxygen desaturation. In two patients the trachea was intubated from the second and third attempt. There were two tracheal intubation failures, associated with extended tracheal intubation and an Airtraq® specialist had to continue with intubation. The Airtraq® reduced the duration of intubation attempts in all cases, reduced the number of optimization maneuvers required, and reduced the potential for dental trauma.

Gender (m/f)	14/4
Age (years)	55±10.3
ASA (I/II/III/IV)	2/10/5/1
BMI	25.6±5.1
Mallampati (III/IV)	8/10
Thyromental distance	55.0 ± 0.6

Table 1. *Patient demographic data and other details (mean ± SD), ASA- American society of Anesthesiologist physical status, BMI- Body mass index*

Parameter	Value
Intubation time	45.5±29.4
Overall intubation rate by residents	16
Intubation attempt	
1st	12
2nd	2
3rd	2

Table 2. *Intubation success rates and intubation time*

Disscusion

Securing the airway early and promptly in emergency situations with an ETT is the optimal method to prevent aspiration and safe ventilation. Studies show positive outcome of patients who were early intubated (1). In the first line of personnel that frequently encounters with such patients are anesthesiology residents. They need to be skillful in lifesaving maneuvers, even such as difficult intubation scenarios.

Few studies in non-cardiac patients indicate that the Airtraq® generates greater hemodynamic stability subsequent to the endotracheal intubation procedure and minor trauma as compared to the Macintosh laryngoscope (6). There are some studies that demonstrate a routine endotracheal intubation using Airtraq® in patients undergoing routine CABG surgery can reduce hemodynamically changes and allow maintain a stable hemodynamic situation, compared to the Macintosh laryngoscope (7).

In our trial, we avoided manikins and performed intubation in clinically pre-evaluated and prepared patients presenting for elective surgery. This setting, created safer environment for both the resident and the trainer.

It is widely known that Macintosh is the “gold standard” intubation method for direct laryngoscopy. The disadvantages described in literature is longer learning curve and more optimization maneuvers required for glottis visualization, in comparison to the Airtraq (3). Also, the potential for dental trauma, the time of intubation attempts and intubation duration is lower with the Airtraq (3,4).

Recent reports show that the Airtraq device acts superiorly in comparison with the Macintosh laryngoscope when used by inexperienced residents in simulated difficult intubation scenarios. (3,4,5). We demonstrated that this device provides a high quality indirect view of the glottis, removing the requirement for oro-pharyngeal and tracheal axes alignment. Residents who are using the Airtraq for the first time, found it easier to learn and to use compared to the conventional Macintosh laryngoscope (5).

Our findings show that Airtraq may be the favorable device for teaching skills to residents who are required to perform difficult tracheal intubation infrequently. However, the two intubation failures emphasize the fact that Airtraq® laryngoscopy requires a clinical training process, especially in the event of anticipated difficult airway management situations.

Conclusion

The residents participating the study, found the Airtraq® easier to use in all scenarios compared to the Macintosh laryngoscope. The Airtraq® may be the preferred device, required by inexperienced physicians in cases of difficult airway.

Keywords: Airtraq®, difficult intubation, residents

Acknowledgements: *For the purposes of this study, the commercial name (Airtraq®) of the intubation device was used.*

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Conflict of interest: none.

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CASE REPORT UDK: 616.717.7/.8-002-089.853

LIFE-THREATENING LARINGEAL KAPOSI SARCOMA IN PATIENT WITH LATE HIV DIAGNOSIS

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ABSTRACT

A 38-year-old woman presented with dark lesions on her upper body, weakness, and weight loss, painful and difficult swallowing. Despite being seen at several different clinics for 6 months, no diagnosis was made. Patient was referred at the Clinic for infectious diseases (CID) because of a high fever. At her first visit at CID she was diagnosed with HIV infection. A lymph node extraction eventually identified Kaposi sarcoma (KS). A laryngeal tumor was also established. Since her condition was clinically defined as a late HIV infection, treatment with antibiotic and antiretroviral therapy was started. Following development of difficulties in breathing and swallowing, a tracheotomy was performed and chemotherapy with Doxorubicin 70 mg was initiated. The patient's general condition improved after 4 courses of chemotherapy. Her condition suddenly deteriorated 4 months later, after chemotherapy was switched to cyclophosphamide 1000 mg. X-ray analysis showed recurrence of the KS with pleural involvement with seriously bad general conditions. Further treatment was initiated with paclitaxel 210 mg and her condition improved again. In countries with low HIV and KS prevalence a lack of experience among doctors of these conditions, results in delays in the diagnosis and initiation of therapy.

Keywords: HIV infection, Kaposi's sarcoma, tracheotomy

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Introduction

Kaposi's sarcoma (KS) is a well-known complication ofHIV infection and the most commonmalignancy observed in patients with AIDS (1). KS is a vascular lesion of low-grade malignant potential caused by human herpes virus-8 (HHV8) infection. KS develops as a multifocal tumor that manifests most frequently in mucocutaneous sites, typically the skin of the lower extremities, face, trunk, genitalia and the oropharyngeal mucosa (2-4). KS also commonly involves lymph nodes and visceral organs, most notably the respiratory and gastrointestinal tracts. Peculiar presentations of KS reported in relation to the gastrointestinal tract involvement include primary KS of the appendix, isolated rectal KS, and KS with mesenteric localization (5,6). Scores of authors have reported on the occurrence of KS in numerous unusual sites (i.e. anatomic locations other than the aforementioned sites) (2,3). KS is described most frequently among individuals with